

INFOTRONIC SYSTEMS INC. NEWS RELEASE



GOTHAM AUDIO CORPORATION

2 WEST 46 STREET • NEW YORK, N. Y. 10036 • PHONE (212) CO 5-4111

DEMONSTRATION OF NEW ELTRO MARK II INFORMATION RATE CHANGER

AT AMA EXHIBITION EDUCATIONAL TECHNOLOGY

First introduced last July at the AMA Conference and Exhibit on Educational Technology, the ELTRO INFORMATION RATE CHANGER is being demonstrated in the even more advanced Mark II execution. Further, this year in cooperation with the AMA, this challenging "knowledge industry" tool is being applied to the conference methodology itself. Major concurrent sessions are being recorded and can be heard later in compressed form in a listening post area. Registrants have the unusual opportunity to listen to sessions missed in little more than half the time required for live delivery.

The ELTRO INFORMATION RATE CHANGER is completely unique in performing the functions of compression and expansion of speech or other material, in one operation, without accompanying pitch change to destroy intelligibility. In the field of educational hardware, this technological innovation obviates the development of software logistics. Training materials in recorded form can be compressed by as much as 56% or expanded by 100% without loss of intelligibility.

The ELTRO device has wide application in many spheres of educational systematology but continues to represent a challenge to leaders of the training methods revolution. Speeded discourse without appreciable reduction in intelligibility offers time saving benefits in high order proportion to the knowledge explosion. Conveying information in compressed form as an immediately available technology is worthy of study as applicable to all areas and levels of training. Moreover, information rate reduction or time expansion finds applications as well, notably in the areas of language training, speech analysis and the training of special groups.

GOTHAM AUDIO CORPORATION, 2 West 46th Street, New York, N. Y. 10036, is the exclusive agency in the U. S. for the manufacturer, ELTRO Automation GmbH, Heidelberg, West Germany. Gotham Audio president, Stephen F. Temmer, states that the Mark II INFORMATION RATE CHANGER is now being produced in adequate quantity to satisfy the extensive requirements in the areas of dial access information retrieval systems and new training technologies. Mr. Temmer also announces the formation of INFOTRONIC SYSTEMS INC. to function exclusively as the educational technology member of the Gotham Audio group of companies.

Gotham Audio is demonstrating this new educational technology in Booth 3 and offers the opportunity for interested registrants to record and transform material immediately in the booth. Mr. S. F. Temmer, President, and Mr. H. S. Allen, Vice President, of Gotham Audio will be available to demonstrate the ELTRO device and discuss its application to objectives emerging in industry and the educational plant.

AN EXPLANATION OF THE FUNCTIONING OF THE ELTRO TEMPO AND PITCH CHANGER

by

STEPHEN F. TEMMER

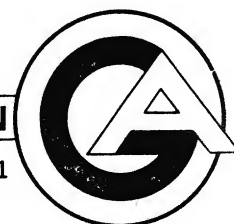
Since the recent re-introduction of the ELTRO MLR Tempo and Pitch Changer and resultant opening of so many new avenues in research, education, broadcasting and recording; we have been asked to give a short description of its operation and how it achieves tempo and pitch change, each independent of the other. The MLR is basically a pitch changer, the tempo changer being one step beyond the pitch change stage. We will therefore begin with an explanation of the PITCH CHANGE function. The MLR's most critical component is its rotating head assembly. This consists of a single magnetic head coil with four separate playback head gaps spaced exactly 90 degrees apart on its perimeter. All four gaps must match perfectly with respect to three important attributes: 1) the angular spacing must be exactly 90 degrees; 2) the four gaps must be perfectly parallel; and 3) the output level from all four gaps must be within 1 dB for the entire frequency range from 30 - 15,000 Hz. Only about 26% of heads manufactured meet all three of these specs. The head coil is connected to two coin silver rings at the bottom of the head which in turn are contacted by silver-graphite brushes on the machine itself. The tape is so threaded around this rotating head as to make a 90 degree wrap (or contact arc) on the head. It can be seen then that the rotating head will give a continuous playback scan of the tape; one gap of the head just leaving the tape as the next one takes over. This provides continuous reproduction of the tape regardless of the linear tape speed or rotational speed of the head.

Consider now what actually determines the pitch of a recording: it actually depends on the relative speed of head gap to tape coating. Let us now so thread the MLR and its associated tape playback deck as to drive the tape from the normal 15 ips capstan on the playback deck. This will assure constant speed or, in other terms, constant "tempo". For a motionless rotary head we will get normal tape playback at normal tempo and normal pitch. Now let us rotate the head so that the head gaps move in a direction opposite to the tape travel. The result will be an increase in the relative head gap to magnetic coating speed and with it a raising of the pitch. Rotate the head in the opposite direction, i.e. so the gaps travel in the same direction as the tape

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and the relative gap to coating speed drops and with it the pitch drops. As an example: if the rotational speed of the head is so chosen as to double the head gap to coating speed (to 30 ips) then the pitch will double or raise an octave. This leads us now to the tempo change explanation.

TEMPO CHANGE:

Suppose you have raised the pitch an octave. Now change the capstan speed of your playback deck to 7 1/2" speed. The result: the pitch is back to its original level while the tempo has been cut in half; i.e. reproduction at half the speed with normal pitch. Now imagine a linking of the rotational speed of the head with the rotational speed of the capstan (i.e. linear speed of the tape) in such a way as to maintain the pitch constant over a wide range of speeds. It is this function which has been cleverly combined in the ELTRO MLR Tempo and Pitch Changer. The MLR has both a variable speed rotating head and capstan drive.

HOW IS THIS SYNCHRONISM ACCOMPLISHED?

The heart of the MLR is a spacial, unique synchronous motor so constructed as to permit free rotation of both the rotor and the field sections; the field being supplied voltage through a set of slip rings and brushes. The rotor is a direct drive to the capstan while the field gear drives the rotating head. The motor is a 900 rpm unit. A second ordinary outside running motor in the MLR is linked through a variable speed friction drive to the outside running rotor of the synchronous motor. When this drive system imparts a rotational speed of 900 rpm to the rotor (capstan), the field will stand still and with it the head assembly to which it is geared. In this position the MLR will drive the tape at 15 ips and the stationary head will give normal playback. Increase the drive to the rotor to 1000 rpm and the field will rotate at 100 rpm in the same direction as the rotor. Drive the rotor at 800 rpm and the field will do 100 rpm in the opposite direction. The synchronous nature of the motor assures perfect tracking for any drive speed to its rotor assuring a fixed relationship between capstan and head rotation speed the sums of which are always 15 ips.

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INSTRUCTIONS FOR COMPRESSION AND/OR EXPANSION OF RECORDED MATERIAL

Ordering agency: Person to contact _____
Institution _____
Address _____
_____ Zip _____
Phone number (_____) _____

TO: INFOTRONIC SYSTEMS INC., 2 West 46th St., New York, N.Y. 10036. (212) 265-4111

You are herewith authorized to perform the following work in compressing and/or expanding the material on the enclosed reel(s) of tape:

- 1) Number of original reels of tape _____ Reel size _____
- 2) Total timing of original material _____
- 3) Original tapes recorded at () 15 ips () 7-1/2 ips () full track () half track
- 4) Original tapes recorded on (make and model of recorder) _____
- 5a) We enclose _____ reels of blank tape for your use with our material.
- 5b) We request that you supply the tape ().
- 6) We would like the final recording at () 15 ips () 7-1/2 ips
- 7) Please transform the material as follows:
Reel 1: expand/compress to _____% of the original timing.
Reel 2: expand/compress to _____% of the original timing.
Reel 3: expand/compress to _____% of the original timing.
Reel 4: expand/compress to _____% of the original timing.
We request that you use your own judgment (compression only) ().
- 8) We have a deadline for return of this material. It must reach us by _____
(NOTE: Unless otherwise indicated, 2-3 weeks are required for processing.)
- 9) Return our original and copies via () mail () airmail () best way
We understand that we may return any unsatisfactory material with a full explanation,
and you will refund or credit us for any payments made.

RATES FOR COMPRESSING OR EXPANDING MATERIAL:

<u>TIME (FINISHED)</u>	<u>ORIGINAL AT 15 IPS</u>	<u>ORIGINAL AT 7-1/2 IPS</u>
Up to 10 minutes	free of charge	free of charge
Up to 30 minutes	\$ 8.00	\$ 12.00
Up to one hour	12.00	18.00
Each add'l hour or fraction	10.00	15.00

Electrovoice 668

\$495

667

\$345

} &
normal
discounts

Both unconditionally guaranteed.

1700